Claims

1. Apparatus for wireless duplex communication, comprising, a first optical transceiver having a first optical transmitter and a first optical receiver, a second optical transceiver having a first optical transmitter and a first optical receiver, the first and second optical transceivers being located at the opposite end of an optical communication line formed thereby, wherein the output of each of the optical transmitters is a diverging beam of incoherent electromagnetic radiation arranged to have a cross sectional diameter which is larger than the cross sectional diameter of the respective optical receiver at that point on the communication line at which the respective optical receiver is situated.

2. Apparatus as claimed in Claim 1 wherein the optical transmitter emits electromagnetic radiation having a range of wavelengths.

3. Apparatus as claimed in claim 2 wherein, the optical transmitter emits radiation in the range 800 to 900 nanometres.

4. An apparatus as claimed in Claim 1 wherein the optical transmitter comprises a light emitting diode which provides the diverging beam of incoherent electromagnetic radiation.

5. Apparatus as claimed in claim 4 wherein the optical transmitter comprises the LED and further comprises at least one optical condenser lens, the

input to the optical condenser lens being provided by the LED and the output of the optical transmitter being provided by the optical condenser.

6. Apparatus as claimed in claim 1 wherein the optical receiver consists of an optical condenser lens, diaphragm and photodiode, wherein the diaphragm is installed in the focal plane of the optical condenser lens.

7. Apparatus as claimed in claim 6 wherein the distance Δ between the photodiode and the diaphragm situated in the focal plane of the optical condenser lens is defined by the formula

$\mathbf{\Delta = b\ F\ /\ Dc}$, where

b - diameter of the light-sensitive site of the photodiode,

Dc - diameter of the optical condenser lens.

F - Focal distance of the optical condenser measured from the lens of the optical condenser to the centre of the stop operture.

8. Apparatus as claimed in claim 6 wherein the input of the optical condenser is the input of the optical receiver, and the output of the photodiode is the output of the first optical receiver.

9. Apparatus as claimed in claim 1 wherein the beam angle θ characterizing of the first optical transmitter and the first optical receiver of each of the said transceivers is defined from the following condition:

$\tan 2\theta = a / F$, where
a - diameter of the diaphragm aperture;
F - focal distance of the optical condenser measured from the lens of the optical condenser to the centre of the stop aperture.

10. Apparatus as claimed in claim 9 wherein the beam angle is between 30 and 60 angular minutes.

11. Apparatus as claimed in claim 1 wherein the distance between the optical transmitter and optical receiver of a transceiver is greater than or equal to d/2, where d = 30cm.

12. An apparatus as claimed in claim 1 wherein an input of the optical transmitter of the first transceiver is connected to an output of a converter through a modulator, and an output of the optical receiver of the first transceivers is connected to an input of a demodulator, the output thereof being connected to an input of a converter.

13. An apparatus as claimed in claim 1 wherein an input of the optical transmitter of the second transceiver is connected to an output of a converter through a modulator, and an output of the optical receiver of the second transceivers is connected to an input of a demodulators, the output thereof being connected to the input of a converter.

14. Apparatus as claimed in claim 12 wherein the converter is made in the form of a transformer, which transforms the signals of the input discrete information into a coded signal using the Manchester

code during transmission, and which is capable of a reverse transformation of signals coming from the outputs of the respective demodulators during reception.

15. Apparatus as claimed in claim 1 wherein each optical transceiver further comprises a second optical transmitter and a second optical receiver.

16. Apparatus as claimed in claim 12 wherein said transceivers are connected to the input of the respective demodulators through a summator.

17. Apparatus as claimed in claim 14 wherein the input of the second optical transmitter of each of the transceivers is connected to the output of the respective modulator, and the outputs of the first and second optical receivers is connected to the input of the respective demodulator through a summator.